DOCUMENT RESUME

ED 065 618 TM 001 918

TITLE	Occupational Therapy Aid (medical ser.) 079.368-026--Technical Report on Development of USES Aptitude Test Battery.
INSTITUTION	Manpower Administration (DOL), Washington, D.C. U.S. Training and Employment Service.
REPORT NO	TR-S-272R
PUB DATE	May 68
NOTE	15p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aptitude Tests; *Cutting Scores; Evaluation Criteria; Job Applicants; *Job Skills; Norms; Occupational Guidance; *Occupational Therapy Assistants; *Personnel Evaluation; Test Reliability; Test Validity
IDENTIFIERS	GATB; *General Aptitude Test Battery

ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample and a personnel evaluation form are also included. (AG)

May 1968 United States Employment Service Technical Report S-272R

S-272R

ED 065618

Development of USES Aptitude Test Battery for Occupational Therapy Aid

(medical ser.) 079.368

TM 009 918

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION

Technical Report on Development of USES Aptitude Test Battery

For . . . .

Occupational Therapy Aid (medical ser.) 079.368-026

S-272R

(Developed in Cooperation with the
Wisconsin State Employment Service)

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

U.S. DEPARTMENT OF LABOR
Willard Wirtz, Secretary

BUREAU OF EMPLOYMENT SECURITY
Robert C. Goodwin, Administrator

MANPOWER ADMINISTRATION
Stanley H. Ruttenberg,
Administrator

U.S. EMPLOYMENT SERVICE
Charles E. Odell,
Director

May 1968

FOREWORD

The United States Employment Service General Aptitude Test Battery (GATB) was first published in 1947. Since that time the GATB has been included in a continuing program of research to validate the tests against success in many different occupations. Because of its extensive research base the GATB has come to be recognized as the best validated multiple aptitude test battery in existence for use in vocational guidance.

The GATB consists of 12 tests which measure 9 aptitudes: General Learning Ability, Verbal Aptitude, Numerical Aptitude, Spatial Aptitude, Form Perception, Clerical Perception, Motor Coordination, Finger Dexterity, and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, with a standard deviation of 20.

Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, in combination, predict job performance. For any given occupation, cutting scores are set only for those aptitudes which contribute to the prediction of performance of the job duties of the experimental sample. It is important to recognize that another job might have the same job title but the job content might not be similar. The GATB norms described in this report are appropriate for use only for jobs with content similar to that shown in the job description included in this report.

Charles E. Odell, Director
U. S. Employment Service

GATB Study #2699

Development of USES Aptitude Test Battery

for

Occupational Therapy Aid
(medical ser.) 079.368-026

S-272R

This report describes research undertaken for the purpose of developing General Aptitude Test Battery (GATB) norms for the occupation of Occupational Therapy Aid (medical ser.) 079.368. The following norms were established:

GATB Aptitudes	Minimum Acceptable GATB Scores
V - Verbal Aptitude	95
P - Form Perception	75
Q - Clerical Perception	95
M - Manual Dexterity	80

Research Summary

Sample:

61 female and 4 male trainees who took training given by the Wisconsin State Board of Health in cooperation with various hospitals in Wisconsin. This training was sponsored by the Department of Health, Education and Welfare.

Criteria:

A multiple hurdle consisting of both final grade point averages (GPA) for occupational therapy course of study and supervisory rating (DRS) of job performance during internship was used as the final criterion for this study.

Design:

Longitudinal (test data collected at the beginning of the training and criteria collected at the end of training and after completing the training period on a job.)

Minimum aptitude requirements were determined on the basis of a job analysis and statistical analyses of aptitude mean scores, standard deviations and selective efficiencies.

Predictive Validity:

Phi Coefficient = .61 (P/2 less than .0005)

Effectiveness of Norms:

Only 62% of the non-test-selected trainees used for this study were good students; if the trainees had been test selected with the S-272R norms, 87% would have been good trainees. 38% of the non-test-selected trainees used for this study were poor students, if the trainees had been test selected with the S-272R norms only 13% would have been poor trainees. The effectiveness of the norms is shown graphically in Table 1.

Table I

Effectiveness of Norms

	Without Tests	With Tests
Good Students	62%	87%
Poor Students	38%	13%

Sample Description

Size: N=65

Occupational Status: Trainees

Training Setting: Sample was trained by staff of the State Board of Health, Madison, Wisconsin at 4 different locations of the state.

Student Selection Requirements:

Education: High school graduates preferred

Previous Experience: Hospital or nursing home experience preferred.

Tests: None

Other: Personal interview, transcript of school grades, check of references and ability to speak, read and write English.

Principal Activities: A similar curriculum outline was used at each location to train the sample for the job described in the appendix.

Table II

Means, Standard Deviations, Ranges and Pearson Product-Moment Correlations with the Criteria for Age, Education and Experience

	M	SD	Range	r_{GPA}	r_{DRS}
Age (years)	38.3	13.2	18-60	-.059	.180
Education (years)	12.3	1.3	8-16	.263*	.161
Experience (months)	9.8	5.2	4-24	-.089	.083

*Significant at the .05 level

Experimental Test Battery

All 12 tests of the GATB, Form B, using the IBM answer sheets were administered during 1964, 1965, 1966, and 1967.

Criterion

Two criteria were obtained for each individual: (1) a composite grade received in the areas of academic achievement, class work performance, oral report and final exam (obtained after the training was completed) and (2) a job performance criterion consisting of supervisory ratings made by the immediate supervisor using the SP-21 Descriptive Rating Scale. (See Appendix).

A correlation of .52 between the two criteria indicated that the criteria were measuring different aspects of performance. As a result a multi-hurdle criteria of class grades and job performance were used for establishing the norms.

Criterion Score Distribution:

	GPA	DRS
Possible Range:	4-75	9-45
Actual Range:	50-71	19-43
Mean:	60.9	34.1
Standard Deviation:	4.8	5.2

Criterion Dichotomy: The criterion distribution was dichotomized into low and high groups by placing 38% of the sample in the low group to correspond with the percentage of students considered unsatisfactory or marginal. Students in the high criterion group were designated as "good students" and those in the low group as "poor students". The criterion critical scores are 56 on the grade point average criterion (which fails 18% of the sample) and 33 on the descriptive rating scale criterion (which fails 28% of the sample).

Aptitudes Considered for Inclusion in the Norms

Aptitudes were selected for tryout in the norms on the basis of a qualitative analysis of job duties involved and a statistical analysis of test and criterion data. Tables 3, 4 and 5 show the results of qualitative and statistical analyses.

Table III

Qualitative Analysis
(Based on the job analysis the aptitudes listed appear to be important to the work performed)

G - General Learning Ability	Required in understanding instructions and applying the techniques learned, and in observing patients to determine their progress and/or particular problems.
V - Verbal Aptitude	Required in communicating with patient, in understanding oral and written instructions and in preparing oral and written reports.
Q - Clerical Perception	Required in maintaining inventory, in ordering supplies and materials and in posting progress reports of patients.
K - Motor Coordination	Required in guiding and demonstrating the activity being taught the patients, in moving the supplies and materials and in setting up the projects to be worked on.
M - Manual Dexterity	Required in guiding and demonstrating the activity being taught the patients, in moving the supplies and materials and in setting up the projects to be worked on.

Table IV

Means, Standard Deviation, Ranges and Product-Moment Correlation with the Criteria for the aptitudes of the GATB, N=65

Aptitudes	Mean	SD	Range	r_{GPA}	r_{DRS}
G - General Learning Ability	104.3	12.9	74-134	.386**	.245*
V - Verbal Aptitude	105.4	14.1	66-135	.239	.245*
N - Numerical Aptitude	97.5	13.4	66-130	.239	.235
S - Spatial Aptitude	108.6	15.8	74-140	.235	-.062
P - Form Perception	100.3	15.7	63-136	.276*	.009
Q - Clerical Perception	107.2	13.4	77-138	.366**	.214
K - Motor Coordination	106.6	16.2	62-148	.262*	.162
F - Finger Dexterity	97.4	19.0	54-141	.235	.216
M - Manual Dexterity	102.5	21.8	52-146	.361**	.278*

* Significant at the .05 level
** Significant at the .01 level

Table V

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X	X				X	X		X
Irrelevant									
Relatively High Mean				X		X	X		
Relatively Low Standard Dev.	X	X	X			X			
Significant Correlation with Criterion 1	X				X	X	X		X
Significant Correlation with Criterion 2	X	X							X
Aptitudes to be considered for Trial Norms	G	V			P	Q	K		M

Derivation and Validity of Norms

Final norms were derived on the basis of a comparison of the degree to which trial norms consisting of various combinations of Aptitude G, V, P, Q, K and M at trial cutting scores were able to differentiate between the 62% of the sample considered good students and 38% of the sample considered poor students. Trial cutting scores at five point intervals

approximately one standard deviation below the mean are tried because this will eliminate about one-third of the sample with three aptitude norms. For two aptitude trial norms minimum cutting scores slightly higher than one standard deviation below the mean will eliminate about one-third of the sample; for four-aptitude trial norms cutting scores slightly lower than one standard deviation below the mean will eliminate about one-third of the sample. The Phi Coefficient and Chi Square test were used as a basis for comparing trial norms. The optimum differentiation for the occupation of Occupational Therapy Aid, 079.368, was provided by the norms of V-95, P-75, Q-95 and M-80. The validity of these norms is shown in Table 6 and is indicated by a Phi Coefficient of .61 (statistically significant at the .0005).

Table VI

Predictive Validity of Test Norms
V-95, P-75, Q-95 and M-80 on a Multi-Hurdle
Criteria of Class and Job Performance

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Students	6	34	40
Poor Students	20	5	25
Total	26	39	65

Phi Coefficient = .61 Chi Square (X^2) = 24.4
Significance Level = P/2 less than .0005

Determination of Occupational Aptitude Pattern

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 36 OAP's included in Section II of the Manual for the General Aptitude Test Battery. The data for this sample may be considered for future groupings of occupations in the development of new occupational aptitude patterns.

A-P-P-E-N-D-I-X

TRAINEE GRADE SHEET

For Occupational Therapy Aid

	Academic Achievement	Classwork Performance	Oral Report	Exam	Final Score
Possible Points	25	20	10	20	75
Name					

WSES-1004

Form Approved
Budget Bureau No. 44–5907

DESCRIPTIVE RATING SCALE
(For Aptitude Test Development Studies)

Score _____

RATING SCALE FOR _____
D. O. T. Title and Code

Directions: Please read the sheet "Suggestions to Raters" and then fill in the items listed below. In making your ratings, only one box should be checked for each question.

Name of worker (print) _____
(Last) (First)

Sex: Male _____ Female _____

Company Job Title: _____

How often do you see this worker in a work situation?

- ☐ See him at work all the time.
- ☐ See him at work several times a day.
- ☐ See him at work several times a week.
- ☐ Seldom see him in work situation.

How long have you worked with him?

- ☐ Under one month.
- ☐ One to two months.
- ☐ Three to five months.
- ☐ Six months or more.

A. How much work can he get done? (Worker's ability to make efficient use of his time and to work at high speed.)

- ☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.
- ☐ 2. Capable of low output. Can perform at a slow pace.
- ☐ 3. Capable of fair work output. Can perform at a acceptable but not a fast pace.
- ☐ 4. Capable of high work output. Can perform at a fast pace.
- ☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of his work? (Worker's ability to do high–grade work which meets quality standards.)

- ☐ 1. Very poor. Does work of unsatisfactory grade. Performance is inferior and almost never meets minimum quality standards.
- ☐ 2. Not too bad, but the grade of his work could stand improvement. Performance is usually acceptable but somewhat inferior in quality.
- ☐ 3. Fair. The grade of his work is mediocre. Performance is acceptable but usually not superior in quality.
- ☐ 4. Good, but the grade of his work is not outstanding. Performance is usually superior in quality.
- ☐ 5. Very good. Does work of outstanding grade. Performance is almost always of the highest quality.

C. How accurate is he in his work? (Worker's ability to avoid making mistakes.)

- ☐ 1. Very inaccurate. Makes very many mistakes. Work needs constant checking.
- ☐ 2. Inaccurate. Makes frequent mistakes. Work needs more checking than is desirable.
- ☐ 3. Fairly accurate. Makes mistakes occasionally. Work needs only normal checking.
- ☐ 4. Accurate. Makes few mistakes. Work seldom needs checking.
- ☐ 5. Highly accurate. Rarely makes a mistake. Work almost never needs checking.

D. How much does he know about his job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with his work.)

- ☐ 1. Has very limited knowledge. Does not know enough to do his job adequately.
- ☐ 2. Has little knowledge. Knows enough to "get by."
- ☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.
- ☐ 4. Has broad knowledge. Knows enough to do good work.
- ☐ 5. Has complete knowledge. Knows his job thoroughly.

E. How much aptitude or facility does he have for this kind of work? (Worker's adeptness or knack for performing his job easily and well.)

- ☐ 1. Very low aptitude. Has great difficulty doing his job. Not at all suited to this kind of work.
- ☐ 2. Low aptitude. Usually has some difficulty doing his job. Not too well suited to this kind of work.
- ☐ 3. Moderate aptitude. Does his job without too much difficulty. Fairly well suited to this kind of work.
- ☐ 4. High aptitude. Usually does his job without difficulty. Well suited to this kind of work.
- ☐ 5. Very high aptitude. Does his job with great ease. Unusually well suited for this kind of work.

F. How large a variety of job duties can he perform efficiently? (Worker's ability to handle several different operations in his work.)

- ☐ 1. A very limited variety. Cannot perform different operations adequately.
- ☐ 2. A small variety. Can perform few different operations efficiently.
- ☐ 3. A moderate variety. Can perform some different operations with reasonable efficiency.
- ☐ 4. A large variety. Can perform several dif ferent operations efficiently.
- ☐ 5. An unusually large variety. Can do very many different operations efficiently.

G. How resourceful is he when something different comes up or something out of the ordinary occurs? (Worker's ability to apply what he already knows to a new situation.)

- ☐ 1. Very unresourceful. Almost never is able to figure out what to do. Needs help on even minor problems.
- ☐ 2. Unresourceful. Often has difficulty handling new situations. Needs help on all but simple problems.
- ☐ 3. Fairly resourceful. Sometimes knows what to do, sometimes doesn't. Can deal with problems that are not too complex.
- ☐ 4. Resourceful. Usually able to handle new situations. Needs help on only complex problems.
- ☐ 5. Very resourceful. Practically always figures out what to do himself. Rarely needs help, even on complex problems.

H. How often does he make practical suggestions for doing things in better ways? (Worker's ability to improve work methods.)

- ☐ 1. Never. Sticks strictly with the routine. Contributes nothing in the way of practical suggestions.
- ☐ 2. Very seldom. Slow to see new ways to improve methods. Contributes few practical suggestions.
- ☐ 3. Once in a while. Neither quick nor slow to see new ways to improve methods. Contributes some practical suggestions.
- ☐ 4. Frequently. Quick to see new ways to improve methods. Contributes more than his share of practical suggestions.
- ☐ 5. Very often. Extremely alert to see new ways to improve methods. Contributes an unusually large number of practical suggestions.

I. Considering all the factors already rated, and only these factors, how satisfactory is his work? (Worker's "all-round" ability to do his job.)

- ☐ 1. Definitely unsatisfactory. Would be better off without him. Performance usually not acceptable.
- ☐ 2. Not completely satisfactory. Of limited value to the organization. Performance somewhat inferior.
- ☐ 3. Satisfactory. A fairly proficient worker. Performance generally acceptable.
- ☐ 4. Good. A valuable worker. Performance usually superior.
- ☐ 5. Outstanding. An unusually competent worker. Performance almost always top notch.

May 1968 FACT SHEET S-272R

Job Title

Occupational Therapy Aid (medical ser.) 079.368-026

Job Summary

Assists Occupational Therapist in planning, organizing and directing voluntary recreational, educational, social, creative and manual arts programs for patients in hospitals and similar institutions as an aid to therapy and rehabilitation.

Work Performed

Plans and organizes program with guidance and direction from the Occupational Therapist. Takes charge of a group of patients and may escort them to the activity area. Organizes patients into classes according to similar abilities. Selects type of activity that patient is best able to do. Distributes materials, games or equipment in accordance with the activity. Instructs and demonstrates to the patients in such activities as games, arts, crafts, library work, homemaking and personal care. Observes patients to determine degree of cooperation, ability and instruction needed to aid in rehabilitating them. Adjusts activity to best benefit patient.

Attempts to develop an individual relationship with patient to gain his confidence and respect. Gives maximum encouragement through appreciation of the work. Circulates among patients to observe them, to foster group relations, to communicate with them and try to understand their problems.

Maintains data on patients capacity to participate and posts records or attends conference to report progress of patient. Discusses individual case histories with Occupational Therapist. May plan exhibits of work done by patients.

Orders and stores supplies to be used in therapy. Collects materials at end of therapy periods. Maintains, repairs or replaces damaged equipment and supplies.

Effectiveness of Norms

Only 62% of the non-test selected trainees used for this study were good students; if the trainees had been test-selected with the S-272R norms, 87% would have been good trainees. 38% of the non-test selected trainees used for this study were poor students, if the trainees had been test-selected with the S-272R norms only 13% would have been poor trainees.

Applicability of S-272R Norms

The aptitude test battery is applicable to jobs which include a majority of duties described above.

GPO 860-993

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION
BUREAU OF EMPLOYMENT SECURITY

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF LABOR

THIRD CLASS MAIL